Digital Public Space

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Digital Public Spaces

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About FutureEverything Publications

Each year *FutureEverything* proposes, develops and responds to particular themes. These themes are provocations, designed to open up a space for debate and practice, made tangible through art and design projects. FutureEverything Publications seek to contribute to an international dialogue around these themes.

The *Digital Public Spaces* publication has been developed by FutureEverything working with Bill Thompson of the BBC and in association with The Creative Exchange.

Drew Hemment
Founder and CEO
FutureEverything

We Are Digital Public Space - Introducing Digital Public Spaces

Drew Hemment and Bill Thompson

This publication gathers a range of short explorations of the idea of the *Digital Public Space*. Together they provide insight into the future development of the internet as a zone of engagement as web technologies mature, mobile access becomes dominant and new devices allow us to consume, learn, create and share with each other.

The central vision of the Digital Public Space is to give everyone everywhere unrestricted access to an open resource of culture and knowledge. This vision has emerged from ideas around building platforms for engagement around cultural archives to become something wider, which this publication is seeking to hone and explore.

Contributors include some of the people who are working to make the Digital Public Space happen. But this is not the story of a few people. This is everybody's culture, we are all Digital Public Space.

The Digital Public Space initiative began life within BBC Archive Development and is now being investigated by the BBC, BFI, Tate, British Library, Arts Council England, FutureEverything, The Creative Exchange and many more.

The Digital Public Space is in one sense a new perspective on the international effort around open technology and open culture. It mirrors the work of Tim Berners-Lee and the World Wide Web Consortium (W3C) around open standards, and strives to do for digitised cultural content what the Open Data campaign is doing for publicly-funded datasets. It does not replace the open Web, but demonstrates what it might deliver if its full potential were achieved.

This represents a sea change in thinking about expertise and ownership of cultural heritage. The gatekeepers of knowledge and culture, the 'experts', realise the need to open this effort up, and to actively engage many actors and citizens. Two of the early architects of the Digital Public Space – Tony Ageh and Bill Thompson – have seeded the idea beyond the confines of the BBC.[1]

The truly deep shifts are now happening to culture from the bottom-up. This can be seen in the collaborative code ethic of GitHub – an open source code repository – and the communities of coders and artists who share code and effort online. This is radically different to the traditional approach to building and refining code – or any form of culture – in a closed and inaccessible way.

This publication and events such as the FutureEverything Summit are helping to frame and expand the debate. Here we place Digital Public Space alongside related international initiatives, from the Google Cultural Institute to Europeana. These are part of the international effort to construct the underlying infrastructure and standards that are a precursor to a Digital Public Space.

The Digital Public Space is made up of networks of technical infrastructure, data models and standards for authentication, rights management and identity, digital assets such as images, video and information, data trails, software layers, coders, designers, museums, broadcasters, galleries, corporations, and the communities who share their interactions online.

Work to build the Digital Public Space is already widespread, through efforts at BBC Archive Development including the recently-announced Research and Education Space, alongside Europeana offering a model for a comprehensive catalogue of digitised cultural assets, ResearchSpace showing how linked data can transform academic research and The Space (thespace.org), the Arts Council

England/BBC experimental service, delivering digital art to multiple devices during summer 2012.

FutureEverything has been engaged with the ideas behind the Digital Public Space since its inception. As a result the idea of the Digital Public Space has been colonised by artists and makers as well as curators and technologists, and the resulting fusion has demonstrated yet again the enormous impact of this creative approach to technology and culture.

FutureEverything has helped to make the Digital Public Space come alive through advocacy and discussion forums, and by leading workshops, developing artworks, prototypes and experiences, which can push at the possible, to chip away at the barriers, to show that it can, and must, be done.

The Creative Exchange (CX) knowledge exchange hub is also building on this and aims to create new products, experiences and business opportunities which empower anyone, anywhere to access, explore and create with the newly accessible collections of media, public information and data trails which form the Digital Public Space.

If this were design science fiction, Bill Thompson and Tony Ageh at the BBC would have us each travel through n-dimensional space of discovery in a Tardis of our own making, a sentient sensing device able to parse any place or time, with a soundtrack by Delia Derbyshire like the warbling of a time traveling modem.

In one commission for The Space by Blast Theory working with FutureEverything – I'd Hide You (2012) – the archive was a real-time stream of video, chat and images generated by players in the street and online. The innovation was a novel form of interface and performance, a new space-time-experience.

The *emoto* (2012) data visualisation artwork for London 2012 Festival set out to create a new interface to the Olympics out of the stuff of a new limitless context, the interactions of millions of people online. *Chattr* (2013) developed by FutureEverything with the Creative Exchange looks at the ethical and social dimensions when personal conversations are leaked and become public online.

This is a process of critical design that enables us to interrogate the limits of the Digital Public Space. It is also participatory infrastructure and policy, creating the conditions for the Digital Public Space to exist. We are building and testing as we go, working to bring more people along, putting into play networks of people, things, protocols. Ask not where the Digital Public Space ends, ask which part we can make.

An approach FutureEverything has previously employed (Open Data Cities, 2009-11; *DataGM*, 2010) is to address the entire ecosystem at once, by engaging developers, rights owners, public bodies, all the intermediaries, on many different levels, as agents of change.

Over the coming years an ambition is to make and demonstrate FutureEverything as a prototype for the way that cultural organisations need to evolve to exist within the DPS.

Contributors were asked to respond in whatever way they feel appropriate to the question, what could a Digital Public Space contain, and how might it be created, used, explored?[2] We hope this publication will prove to be a useful benchmark as we move the Digital Public Space forward.

Drew Hemment and Bill Thompson - for the editors.

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[1] The term Digital Public Space was coined by Tony Ageh but the concept owes much to earlier work by others. For example, that of Neville Brody on models for digital engagement based on his work with the BBC and other broadcasters.

[2] Constructing a Digital Public Space' was first published by FutureEverything in May 2012.

***Drew Hemment** is an artist, curator and researcher. He is Founder and CEO of FutureEverything, Associate Director of ImaginationLancaster at Lancaster University, and Deputy Director of The Creative Exchange (CX). His work over 20 years in digital culture has been recognised in awards including Lever Prize 2010, Big Chip International Award for Innovation 2010 and Honorary Mention Prix Ars Electronica 2008. Drew is a member of the Manchester Innovation Group and the Leonardo Editorial Board. In 1999, awarded a PhD at Lancaster University, in 2009 elected a Fellow of the Royal Society of the Arts (UK), and in 2010 an Eyebeam resident (USA).*

***Bill Thompson** has been working in, on and around the Internet since 1984 and spends his time thinking, writing and speaking about the ways digital technologies are changing our world. A well-known technology journalist, he is Head of Partnership Development in the BBC's Archive Development Group, building relationships with museums, galleries and other institutions around ways to make archive material more accessible, and a Visiting Professor at the Royal College of Art.*

Why the Digital Public Space Matters

Tony Ageh

Extracted from The Digital Public Space: What it is, why it matters and how we can all help develop it. , delivered by Tony Ageh Controller, Archive Development at the Economies of the Commons conference, Amsterdam Thursday, October 11, 2012

Since its formation in 1922 as the *British Broadcasting Corporation* the BBC has played a key role in shaping broadcast technology, initially for sound and more recently for vision. It remains heavily involved in their further development. Now, with online distribution and engagement such a key part of the ways in which the BBC fulfils its public purposes, we are working with many other organisations to shape the Digital Public Space, helping to define a roadmap or a blueprint for an emerging digital environment whose defining characteristics are openness, persistence, engagement, partnerships, access and public benefit.

The Digital Public Space is not a product or a service, but an arrangement of shared technologies, standards and processes that will be collaboratively developed and commonly applied, to deliver a set of principles, objectives and purposes against which collective enterprise can be evaluated.

Nor is it a 'better Internet' or an alternative to the Web but rather something that emerges from the full and proper application of Web technologies, current and under development, to address the problems that face organisations and individuals that want to share their digitised assets in a structured way.

The model of the DPS emerged from the growing realisation that the environment within which broadcasters, memory institutions and individuals were creating, distributing and storing the things they made or curated was being transformed by digital technologies, and that certain key issues were not being properly addressed.

For example, our approach to permanence, or at least of potential permanence, was not well thought through. Things no longer 'need' to disappear after a certain period of time. Material that once would have flourished only briefly before being locked up or even thrown away — can now be made available forever. At the BBC we realised that Licence Fee Payers increasingly expect this to be the way of things, and we will soon need to have a very good reason for why anything at all disappears from view or is not permanently accessible in some way or other.

That is why the Digital Public Space has placed the continuing and permanent availability of all publicly-funded media, and its associated information, as the default and founding principle. Everything else then becomes possible.

Then there is the issue of the cost and control of distribution. Before the advent of the Internet, all anybody needed was access to a suitable receiving device and some form of electricity, in order to be connected to a broadcasting network that brought them an unmetered supply of information, education and entertainment.

The Internet brings many benefits, but it brings additional complexity, with more devices, different controls, new charges and a potential loss of privacy, and the BBC's history as a broadcaster does not necessarily give us the expertise needed to deal with these challenges.

In the UK the search for some of these solutions may have started within the BBC but we soon embraced partners including Arts Council England, the British Film Institute, the British Library, The National Archives, Jisc (formerly the Joint Information Systems Committee) and a number of other libraries, archives and memory institutions.

Outside the UK we've talked to the European Commission in Brussels and in particular to Europeana, we've got conversations going on with potential partners in Australia, and there is a genuine recognition in America that such an approach has the capacity to help drive growth across the creative economy.

Achieving what we have in mind will take a collaborative effort, on a global scale, between all interested parties to organise their currently disorganised resources around a common purpose. This is why partnership, one involving the broadest possible coalition, with partners from all over the world, is so key – it is only by working together that we can possibly deliver on our ambitions at scale.

It has been the BBC's aspiration from the beginning to be not merely universal but available equally to all. The benefits of the broadcast medium were to be shared by every single citizen of the UK. In founder Lords Reith's own words, the BBC's mission was "To bring the best of everything to the greatest number of homes", free from direct political or commercial considerations, and ensuring an equivalence of opportunity – regardless of status or income or doctrine or ability – to be informed, educated, entertained.

The DPS is a way to deliver the most we possibly can from our vast and priceless archives, and in so doing to remind ourselves of all that the BBC has achieved to date and position it appropriately for the Digital Age and, in doing so, stimulate the creative industries to inspire innovation and deliver growth throughout our economies. This will have profound implications for how we all, across Europe and beyond, experience and participate in culture, education and citizenship.

It will also stimulate the wider creative economy. Digitising cultural assets and developing an ever expanding range of ways legitimately to access and exploit them will create entirely new industries, providing for highly skilled jobs and new opportunities for entrepreneurs.

Tony Ageh *has held various roles at the BBC since 2002. As Controller, Internet he was responsible for the creation and delivery of the BBC iPlayer. He is currently Controller, Archive Development, delivering the BBC's strategy for making the programme archive more available and developing the Digital Public Space.*

The Library and the Forum

James Bridle

The public library is often put forward as one articulation of public space: access to knowledge for all, equally, with an emphasis on personal agency and privacy. If we are to consider digital public spaces, then what qualities would it share with the space of a public library? What, indeed, are digital products and services doing to the library?

On the face of it, ebooks should be a boon to libraries, encouraging wider reading and sharing, reducing costs, and increasing provision for poorer, older, and differently abled people. Digital books can be shared many times at once, effectively increasing library stocks. Catalogues can be exponentially, if not infinitely, larger. While there are many good arguments to retain ebook prices on the open market at levels which allow publishers and authors to continue to make a living - and this is true too of library editions, which often form a significant proportion of publisher revenues - accommodations can certainly be made in the name of the public good, as they always have been. Digital texts can also be turned into speaking books for the blind, or large format editions, at the touch of a button. But in practice, this is not the way ebooks have been affecting libraries in the real world.

Digital books actually return a huge amount of agency to the publisher, and publishers have been using this leverage to control how libraries stock and issue their books. Ebooks are often stocked on the condition that they continue to be loaned in the same manner as physical books: many libraries still mark a borrowed ebook as "out" (and therefore unavailable to other readers) just like a paper book, despite the electronic copy's infinite reproducibility. Others insist readers visit the actual building to download and "check out" ebooks. In 2011, *HarperCollins* tried to stipulate that its ebooks could only be borrowed 26 times. After this, the file would self-destruct, in accordance with the belief that this is the average lifespan of a worn-and-torn paper lending copy. Finally, many ebook producers are attempting to destroy the "first sale doctrine" which states that those who purchase a book (or many other items) have the right to sell it on, loan it out, and so on. First sale is one of the "traditional safety valves" of copyright laws, ensuring that reasonable copyright is not over-extended. When a library cannot control the conditions of loan of their books, and when they are prevented from selling on overstocked or out-of-date holdings, they lose an ongoing source of revenue, as well as their own autonomy. All of these effects are direct consequences of the political, corporate control which it is possible to embed into digital systems.

While libraries retain many important uses that make them important to retain, it may turn out that many of the book-centric operations of the public library are simply incompatible with digital books. Libraries are not just places to read books, they are public spaces providing a range of services. These are essential to people on lower incomes, beneficial to all, and they are adjusting to different roles. Many contemporary institutions are learning to emphasise the library as a space to work, think and connect. Plenty of physical media can be retained, but their use might well be secondary, while much of visitor's activity is conducted online and with one another as with the collection.

What this tells us is that libraries as public spaces are conditional on them being physical spaces, as all other values are slowly reabsorbed back into corporate, private space. The problems with ebooks in the context of the library are a microcosm of the problem of all concepts of digital public space. The form of public space articulated by the library cannot exist

online, which is always subject to corporate and geographic pressures which may be distant from, and obscure to, its users. The post-geographic conception of the internet is a fallacy, exposed by its interaction with other systems, including legal and meteorological ones. It is not outside geographical influence if it is subject to the weather, as in the major disruption to Amazon's cloud services by severe storms in June of 2012. It is not outside political control if it can be disrupted by legal demands, whether that is cryptographic control of ebook affordances, or judicial oversight of physical servers and data facilities. Digital space is always owned in some way: there is no true commons online.

This should not be news. Out with the library, the wrath visited upon attempts at asserting the right of public protest across multiple interests and locations in the last few years should show to what extent the concept of public space has been degraded. True public space has been under attack from every direction in the UK and elsewhere for far longer than the internet has been around, and it would be naive to think that this trend is not continued online, in a space that emerges from military research and governmental-corporate administration.

The only truly public space of books is and always has been the space of the imagination. This would appear to be true of digital spaces as well.

James Bridle *is a writer, artist and technologist based in London, UK. He exhibits and speaks worldwide on the subjects of literature and technology, networks and culture. His work can be found at http://booktwo.org.*

Modelling the Digital Public Space: The New Renaissance

Neville Brody

The Digital Public Space, a BBC-initiated collaborative project involving the BFI, British Library, National Archive of Births and Deaths, Tate, Arts Council and many others, stands as an amazing and unprecedented opportunity to develop new tools to store, share, exchange and develop human knowledge.

It arrives at a critical juncture in the development of the internet, the fourth major leap in our capability to spread human knowledge after the flowering of cave-painting, the birth of writing and the alphabet, and the invention of printing with the Gutenberg Press. It potentially heralds a new renaissance, leading to a period of unprecedented enlightenment and access.

What started as a process to understand and define what an archive is in the 21st century, is evolving into something much more significant, the core for developing a unique and powerful project, a cultural and living genome of the UK.

A digital archive is not a closed space, nor a museum of dusty objects, but, through the premise that digital data is fluid, is an active and dynamic one, wherein every interaction with any piece of content, plus the paths, journeys and connections through the content space itself, will be stored as part of the growing pool of knowledge. How a piece of data is used is as fundamentally significant as the piece of data itself, and reveals dynamic, responsive and powerful shifting patterns of information that grow and evolve.

Whilst a book, DVD or linear broadcast are fixed storage and delivery forms, the ability to store how any piece of content is interacted with, and information about any other piece of content that the item is connected to, is the catalyst that pushes this space into a whole new level, that of living information.

The ability to store information about usage in a header that sits within any piece of information allows each item to be converted into the equivalent of a living cell. The line of code monitoring the action of a piece of data is active, always on, and can be designed to form responses that change the nature of the cell. This allows us to build a self-organising knowledge space, a living organism, one that is constantly responsive, capable of producing new ideas and solutions. Built-in sentience would allow Swarm Dynamics, leading to knowledge clustering through adjacency-awareness.

This space enables anyone to access any information anywhere at any time on any platform, and anyone else accessing that space, akin to the growth in the availability of information and the spread of knowledge that immediately preceded the Renaissance.

The DPS is essentially a protocol, a common compression algorithm and universal metadata language, meaning any piece of information can be cross-referenced and accessed from any point. This allows new forms of evolving narrative to be told. Artists will construct living narratives through this interconnected space: the future *Dahl, or Adam Curtis, or Orson Welles, Jane Campion or Warhol* will create dramatic scenarios utilising text, moving image, sound, information, design, interaction and synthetic sense to create dramas and art.

One direct consequence will be the dissolution of disciplines. Not anti-discipline, but post-discipline. *Da Vinci* combined science with art, anatomy with poetry, engineering with invention, architecture and design. No longer will we be limited by a socio-industrial model requiring us to adhere to a particular restricted skill or craft.

This venture will have a massive impact on every facet of our lives, from new forms of governance and community to new methods for learning and teaching; new trading mechanisms and economic models; new forms of culture, new dynamics of audience participation, new narratives, new ways to solve problems.

What are the appropriate models for building the necessary catalogue and analytics? Yahoo's cataloguing system, with trees and branches, was replaced with a more fluid engine. The next search and reference model will use contextual criteria including time, relevance and usage. How should a discovery engine work, and how do we create filters and controls?

Should we personally interact with this space through avatars, vessels or robots? Is the DPS an embryonic AI organism that should be allowed to develop an apparent level of sentience and act as a unique being?

How should we imagine this space, what are the visual and experiential metaphors? Should we build dynamic 3-dimensional or 4-dimensional models? What does a map look like in this space? How should we make sense of our journey lines? Who will be the farmers, shepherds and librarians?

In the search for the appropriate physics model, the dynamic for this knowledge space could be fixed and regulated, or self-regulating. We could utilise quantum principles of probability, or use more familiar, recognisable and analogue structures. Are we building a new brain, or do we just want a library or Blockbuster?

Digital is to a potential Knowledge Revolution what Steam was to the Industrial Revolution. The process of building massive synthetic intelligence structured on an organic model raises a significant number of critical and urgent ethical issues: Memory, Identity and Privacy; Governance, Democracy and Access; Control, Ownership, Commercialisation and Copyright; Work and Life.

This is an extraordinary time and opportunity, and the challenge ahead is to ensure that the DPS remains dedicated to the public good, is democratic and not institutionalised or commercialised, works for humanity, and is allowed to evolve fully and limitlessly, helping us to take the next leap in the development, growth and sharing of human knowledge.

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Creating the Backbone

Jill Cousins

'Public Mission' was a reason given by the Museums, Libraries, Archives and Audio-Visual collections for allowing Europeana to apply a CC0[1] license to their metadata. This discussion and outcome with European cultural heritage institutions was fundamental to be able to move from an archive that gave limited access to their digital content to creating a repository that could be distributed and used in new devices and creative compilations, for new and old web audiences. It took 3 years but culminated in the release of over 20 million metadata records into the public domain in September 2012. This has since climbed to 26 million and is set to continue to rise.

As cultural organisations and their audiences move to an age of mass-participation and social media, our sector is increasingly challenged to find a new way of expressing and delivering our public principle. If consumers have the right to access and participate in their culture, how can we deliver a cultural offer that is best-suited to the needs and expectations of an always-connected, always-on, multi-platform digital world? What would this mean for our institutions and their positioning in the cultural landscape - the way they relate to their user communities, to other stakeholders and to each other? Is there an opportunity for new types of relationship with private enterprises in the cultural sector, supported by some form of open content, i.e. content in the public domain or bearing a creative commons license? How would such products and services relate to the commercial offer of publishers and other content companies?

In a series of meetings with strategists, policy makers and content owners within the Europeana Network[2], the concept of a 'commons' or a ' public space' was acknowledged to be a potential mechanism to address some of these questions.

The vision of a common principle that unites the digital programmes and ambitions of both Europe's cultural and creative industries - a Cultural Commons for Europe.

The key values of a Cultural Commons are participation and reciprocity, which could give the key to how organizations enhance their creativity and grow potential innovation[3] and to the future of visions such as the Digital Public Space or Europeana as a European Core Service Platform.[4]

The idea of the Commons is fundamental to the successful operation of the web ecology of content and services. Underpinning the foundation of the commons is a set of resources in the public domain that are owned collectively or 'held in common' and shared openly among a community. The key feature is that, unlike private property, the ownership of resources held in common is inherently inclusive. However such a commons need not be only about content. It can deliver protocols, ontologies, open source software solutions, linked open data, open data models…… Core services that allow for sharing and reduce the cost of developing the required underlying infrastructures, building on what we have done already.

Europeana and the UK's Digital Public Space[5] – which is defined as a set of protocols, services and resources unified under the public domain to raise public awareness and power new forms of engagement- are very similar in concept and vision. They both started out with the idea of creating access to archives but now also provide core services to give open access to resources and technologies for others to innovate and to develop. They reconcile rights for content owners. They develop interoperability and standards and multilingualism to make this possible.

They can be the backbones for sharing and community.

2013 will see 3 pilots at Europeana that make use of the principles conceived by the Europeana Network for a Cultural Commons. The idea is to find out if the Europeana core service platform can live up to these principles and deliver the content, tools and services needed to create the pilots in mutually beneficial ways. Is the Digital Public Space a fourth? Can we provide the underlying platforms and technologies to enable others to manipulate, transport, remix and reform the archival content. It means that we are not sexy but we are publicly available and necessary.

With thanks to the work of Charlotte Hess, Michael Edson, Merete Sanderhoff, Nick Poole, Harry Verwayen and Louise Edwards and the Europeana Network Cultural Commons task force members.

[1] *http://creativecommons.org/publicdomain/zero/1.0/*

[2] *The Commons: from Concept to Action. European Cultural Commons, Cyprus, October 2012*

[3] *Understanding knowledge as a commons: from theory to practice. Edited by Charlotte Hess and Elinor Ostrom. Cambridge MA: MIT Press, 2007*

[4] *http://pro.europeana.eu/web/guest/cultural-commons*

[5] *http://www.bbc.co.uk/blogs/bbcinternet/2011/10/digital_public_space_idea.html*

Jill Cousins *is Executive Director of the Europeana Foundation. Her responsibilities include Europeana.eu; the flagship portal of the European Union that brings together and distributes the content of the Archives, Audio visual collections, Libraries and Museums of Europe. She has many years experience in web publishing including the commercial publishing world as European Business Development Director of VNU New Media and scholarly publishing with Blackwell Publishing.*

Digital Networks, Public Spaces

Steve Crossan

Digital networks can connect people and data on a very large scale. One consequence of this connection is the opportunity for relatively small actions undertaken by large numbers of people in a loosely co-ordinated way to have a large impact. Wikipedia is perhaps the canonical example within information management, but in other ways social movements like the Arab Spring or the Occupy movement demonstrate the same idea.

There's an obvious parallel here with the idea of the agora, the public space where to which everyone has access, where it's possible to meet anyone else, and where everyone's voice can be heard. Except that, if the internet is a city, it's one with a plethora of public spaces rather than a single one. These spaces are very flexible, adapted to particular tasks, and can become popular and widely known though sometimes only for short periods.

The question then is how do we create a bigger, more permanent public space? With city planning, the task is more straightforward. The city has a centre; typically you want to put your public space there. Once you've built the infrastructure, and identified it, everyone knows where it is. Most people will come across it every day. It will only go away if you knock it down and build something else instead.

But on the web, that public space could be anywhere. There isn't an obvious centre to the city. Anyone can decide to build a shared space, and many do. By definition no-one is in charge (a good thing in most ways) so no-one can decide which is the public space.

There are a bunch of solutions to this issue. One is partnership; if a lot of (probably public) organisations can come together and put their weight behind a single space, they can get some traction perhaps within a particular vertical like culture - thespace.org is a great example of this.

The Computer Science solution to this kind of problem (multiple incompatible ways of doing the same thing) is typically to push the means of doing it further down the stack. This of course is why the web works at all; it's based on a standard set of protocols for publishing and reading multimedia content, and for linking between that content.
This 'protocolisation' of the problem is a great solution - if it gets adopted. That the web is in many ways one big public space is down to the success of a few simple protocols like HTML and HTTP.

HTML though doesn't protocolise everything we might want to do in a public space. It's great at making anyone a potential publisher and anyone else a potential reader - but it's less good on ways of connecting people socially, or on standardising the structure of information. This is exactly why Tim Berners Lee and the W3C have spent the last 15 years evangelizing for the semantic web: to expand the capabilities of the public space. There's a direct line of inheritance from these efforts to the Linked Open Data movement within cultural organisations. And of course when the 2 come together (partnership and protocolisation) you can create some very large federated public spaces such as Europeana.

Shared Context, Big History

To realize the promise of the public space though, there's something else that's needed: you want to be able to look at everything that's going on in the same context.

A Geographical Information System can display a huge variety of information in

the same context (a map) because that information is georeferenced.
This provides a very intuitive way of understanding a wide variety of data, but more importantly a way of comparing different datasets, and starting to understand the relationships between them.

With historical and cultural data we need to do the same thing, but adding the element of time - call it spacetime referencing.

As with maps, once all the evidence is registered together, and publicly available, new comparisons become possible that were not possible before. Scholars and students can build on this referenced evidence to create interpretations that can be navigated and compared (not to mention mined for statistical correlations) in loosely coupled ways that are very powerful.
By analogy with Big Data, you might term this Big History, or Big Culture.

Coverage and the Commons

The final piece of the puzzle is coverage. A public space is only interesting if the good stuff can be found there.

Libraries have the same problem - whence the idea of a copyright library. Governments pass regulations which mandate that any time anything is published a copy needs to be sent to one of a small number of reference libraries - ensuring that these collections cover as much as possible of the universe of published information.

So what's the analogy in the digital sphere? How about a Digital Copyleft Archive. This would need to be something international. Let's say that participants agreed that, any time a public institution undertook digitisation of some of their heritage (or paid for digitisation with public money) a copy of that work must be sent to the Digital Copyleft Archive (itself a publicly funded organisation).
The Archive would have a long term digital preservation remit, but also the remit to standardise to a basic set of metadata (place, time, people) based on W3C standards to enable discovery, comparison, visualization etc.

A Digital Copyleft Archive - all of our digitised culture, referenced to the same frame, connected to our conversations - would be a public space worth dreaming about.

Steve Crossan *is the Head of Google's Cultural Institute, and prior to that helped build out Google's first R&D centre outside the US in Zürich, Switzerland and spent 2 years in California as a Product Manager for Gmail. Before Google he founded 3 startups in the UK (2 still exist ..) and studied History at Oxford and Computer Science at University College London (studying the history of technology took him from one to the other). He grew up in Africa, France and the UK.*

Digital Public Space - A Challenge

Paula Le Dieu

At its simplest, the ambition of the Digital Public Space is to create safe digital havens that house our formal cultural heritage on the web. It will be the foundation for the digital homes of our extraordinary sound, image and text archives and the repository of contemporary cultural outputs. It will bring all the value creation of our great institutions - the collections, the curation, the expertise, the knowledge and the stories - to the public wherever they may be, through the web.

Yet, for all this, this paper contends that the discourse and outcomes of Digital Public Space thus far have not been nearly ambitious enough on behalf of the public it seeks to serve. We have failed to address the fundamental affordances of the open web as a Digital Public Space in favour of an overly pragmatic response to the challenges of this early stage of the connected era. In continuing to do so, we fail to create the conditions for a generation to fully understand, participate in and develop cultural, civic and entrepreneurial life in the connected era.

This paper seeks to outline a much more ambitious stage for the Digital Public Space, one that recognises the affordances of the connected era. It imagines a new role for our cultural institutions that positions them as central to public cultural life and positions the public as central to cultural production and understanding.

The Open Web is Digital Public Space

The Digital Public Space was born of years of failed attempts to make significant volumes of archival material available on the web. Those of us working within efforts to provide digital access to the great publicly funded cultural collections have time and again failed to crack the digitisation, rights, mission triumvirate. That is, we couldn't secure the funds to digitise significant volumes without the rights to distribute and we failed to inspire institutions to prioritise digitisation funding and rights negotiations when their mission statements did not reference nor have any awareness of the opportunities of the connected era.

The Digital Public Space is designed to help overcome the challenges of this triumvirate by providing compromised experiences. By designing the Digital Public Space as closed content worlds it is hoped rights holders will be more inclined to allow access to their work by siloing it from the open, remixable web. By creating highly curated experiences it is hoped it will fit more closely to 20th century institutional missions making them more comfortable with participating; and by providing only small amounts of public funding we constantly downscale and rationalise expectations around how much of our cultural heritage should be digitised.

However we are already seeing progress that should make us question the need to compromise. New copyright legislation addresses issues such as orphan works and format shifting, both artefacts of the connected era. We are seeing institutions declare themselves digital first and radically re-interpreting their missions in doing so. It is not yet enough but it points to change. We must be designing a Digital Public Space that imagines a mature connected age. It must be at the leading edge of its medium, and of the open web with all the possibilities and opportunities that creates. We must not let our failures thus far design against the extraordinary opportunities of the connected era.

Making the Digital Public Space

In re-situating the Digital Public Space within the open web we tap into exciting new affordances: sharing as default (right click download, linking, API services), access to the creative backbone (view source) and remixing as standard (see Mozilla's Popcorn or Xray goggles as examples). These, along with what Mimi Ito et al describe as Connected Learning, are compelling cultural, civic and entrepreneurial participatory tools and models that when situated in the vast cultural context of the open web create powerful networks of public expression and participation. They ensure that the public does not just consume the artefacts of the Digital Public Space but that the Public can make Digital Public Spaces.

In this design of the Digital Public Space we can also imagine a far more participatory and central role for our cultural institutions. They can become facilitators, mentors and guides to a public of cultural creators, curators, interpreters, researchers and knowledge producers even as they are key participants. Our cultural heritage becomes part of the fabric of the open web as the public discovers the power of quotable culture and embeds it within their digital discourse. Our cultural institutions will demonstrate a new and powerful relevance as they are once again at the vanguard of public learning, cultural appreciation and production.

Digital Public Space

The Digital Public Space has the opportunity to be the very best of the open web. As such it can inform, enrich and accelerate the social transformation from public consumption of culture to public participation in culture. Significant challenges remain before we can fully realise the Digital Public Space described in this paper. We must continue our efforts to overcome those challenges and commit to the very best of Digital Public Spaces. If not, we risk a generation for whom their cultural heritage is at best quaint and at worst irrelevant.

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Culture Unlimited - New Interfaces for Culture

Drew Hemment

The central vision of the Digital Public Space is to give everyone everywhere unrestricted access to an open resource of culture and knowledge. It is an ambitious plan to create an entirely new dimension to the way we experience culture.

This idea can sometimes sound infinite and limitless – as opposed to a reality embedded in the messy details of rights and royalties. So how far do we yet have to travel to get to this vision of open culture and knowledge? To what extent is today's social web a public space? What limits do we face today if we want to access, reuse, collaborate and co-create online? What kinds of new public online experiences of culture can we build today?

We were able to take a reading of this during the biggest global event there is, the Olympics.

The *emoto* (2012) data visualisation artwork for London 2012 set out to create a new way to experience the Olympics as a global online event. This was an art experiment in making tangible the interactions of millions of people online, and it enabled us to examine how 'open', or closed, is today's online world.

The Internet is a new and apparently limitless context for our activities. There are the interactions between tweets, comments, 'likes', photos and video uploads from the online audience and the multitudinous products of traditional media activity, from shared headlines and images, the stats and stories on sport federation sites and the medals table and other data streams. This is a new form of living collective memory that lives in the shared online space – the sensorium of the Olympics as a global online event.

emoto set out to create a new interface to London 2012 out of the stuff of this limitless context, the ever-expanding dimension of data which overlays our everyday, a novel way to engage in and sense the drama of the sporting events. It was the first project to capture and visualise the online sentiments towards a major global event in real-time.

From the get-go we looked where and how we could detect the online 'public' response to the Games. In the early stages we made the case for open data to the New Media team at the London Organising Committee of the Olympic Games (LOCOG). In the end LOCOG data was released on the London Datastore. But to us, the most interesting context to the sporting events was the engagement of ordinary people online, and we turned to social media.

We wanted to read and make visible the attention, emotion and interaction of the audience, the athletes and everybody participating, not just in the stadia, but around the world. But when dealing with social media, there is no global space. There is a patchwork of territories, platforms and connectivity. We limited our focus to the online response on a single platform, Twitter.

emoto tracked Twitter for themes related to the Games, analysed the messages for content and emotional tone, and visualised the dynamic audience response as events unfolded. It sculpted message content, associated metadata and derived intelligence into a real-time web-based visualization. After the Games a tangible data sculpture served as an aggregate archive of the collective response to London 2012.

There is nothing outside the archive. We did not integrate the stream of medals data, but the 'real' events could be seen as a shadow on the social graph. Everything leaves a shadow and anything can be looked at anew from the perspective of the network.

Part of the promise of the Digital Public Space is that it will be n-dimensional. Once the underlying data structures and standards are in place there is an unlimited number of user interfaces that can be layered on top, each one opening a unique perspective and vista.

In the Digital Public Space everything becomes context for everything else. When we can infinitely discover threads of connected things then culture becomes unlimited too.

But *emoto* came up with a bump upon the limits of the corporate version of the Digital Public Space as it is being built today.

Two weeks before launch, Twitter turned off the tap. We had access through one of the two resellers to the 'Firehose', the massive, real-time stream of all (100%) the Tweets flowing through the network. Then Twitter changed their Terms of Service, and they moved to pull Tweets off third party platforms, so they can monitor and monitise the flow of data. Tweets were pulled off LinkedIn, so what hope we, a small arts outfit! We spoke to Twitter in the USA, in Germany, to their Olympics lead in the UK. To no avail.

Only two weeks before our launch during the Olympics Opening Ceremony, we had to devise a workaround. We built new infrastructure, and turned to the "Public API", giving us access to 1% of Tweets. In the end, our artwork was a success. We could derive the intelligence we needed from the sampled, statistically valid stream of the 'Spritzer'. In that difference – that 99% – we see how far social platforms like Twitter are from a true Digital Public Space.

For a long while Twitter was the poster child of the social media age. But *emoto* may prove to be the last Twitter visualisation of its kind if they stay on this course. Whole ecologies of businesses and projects thrive around the APIs of such platforms, and can be destroyed on a whim – a phenomenon we are exploring in the API Economy session in the FutureEverything Summit this March.

emoto pushed at the limits placed on access and creative reuse when the social web is dominated by a small number of closed platforms. The opportunities for culture and for commerce are infinitely more profound when the technology, and the intelligence, is open. Where the walls are permeable, collaboration and value co-creation becomes easier and the parts, services and experiences become scaleable and sustainable. This is a space for free culture which can also enable new business models, digital marketplaces and value systems, where for example, citizens can curate and trade their own datatrails.

The Digital Public Space is culture unlimited. The DPS must be built, or you may be turned off too.

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Like any well-occupied public space in the real world, such as a city, the Digital Public Space exhibits all of the characteristics of organised complexity – the dynamic inter-relationships of systems, of processes, of emergent self-organisation.

And like cities, there are those who want to bulldoze the complexity and everyday messiness, and replace it with something new and slick and with nice clean lines. As *Jane Jacobs*, the author, urban theorist and activist once memorably noted:

"The trouble with paternalists is that they want to make impossibly profound changes, and they choose impossibly superficial means for doing so." (Jacobs, 2000)

You see this tendency in the online world, often disguised as 'doing good'. A proposal to filter the entire web coming into Australia to keep us safe from child pornography and terrorism was only rejected relatively recently. And, in schools in particular, the 'digital school fence', cutting off access to social media and a host of other things which could genuinely support learning is commonplace.

But the truth is that, if you want people to learn road sense, it is better for them to experience crossing the road than remain safely indoors. And the same is true of the Digital Public Space.

Over the past several years, the *State Library of Victoria* has run an online professional development program for teachers and school library staff called the *Personal Learning Network* or *PLN*. The genesis for the program was a wonderful model created in 2006 by *Helene Blowers* called 23 Things, which we adapted as a platform for shared social learning around technology in education.

In part this was designed to counteract the received wisdom that students – Prensky's (2001) 'digital natives' – were uniformly great at technology and that teachers all needed remedial classes. The reality is that teachers are experts in learning and, given the opportunity, most will model how to be good online learners for their students. We also wanted to do something which didn't focus on the early adopters often targeted by tech companies for their special programs, but on the group in the middle of the bell curve who are typically time poor and just a little anxious about technology.

The beginners' program covers – getting started, organising information, building networks, teaching and learning tools, making the most of resources, changing practice in a digital environment and the future of learning. The course structure is constantly changing, as we reconsider options from beginner to advanced and specialised programs on topics dear to libraries such as research skills.

The program not only exposes people to a range of technologies from social media to research tools, but it has purposefully utilised quite different delivery platforms, ranging from a Wordpress blog, to Lore and Edmodo. Choosing the right tool from a large and constantly changing pool of options is also part of the learning; it is learning how to navigate the digital public space in action.

The results have been phenomenal. We surveyed participants in late 2012 against a set of characteristics based on people's best learning experiences and found:

- 90% had a sense of having learned
- 88% felt that there was an audience for their learning
- 95% felt supported
- 83% felt that it was social

We were also interested in people's experience of flow and found that 81% found the program 'tough' and only 4% 'too tough'

- 23% felt 'a bit' of personal progression, 14% 'quite a bit', 27% 'a lot' and 32% 'heaps'
- 55% were 'excited' and 18% 'passionate' about the program
- 93% said they would recommend it to colleagues.

This was an older cohort – 63% had been working in education for more than 15 years. And that made it all the more remarkable that, when asked how the PLN affected their professional practice, 21% said it changed it a little, 50% said it changed it somewhat, and 19% said it changed their practice completely. For a group who had been in the workforce that long, that 19% is a remarkable result.

We have had a new community develop each year the program has run. One year people will flock around Facebook, another rally around Twitter, or Diigo, or a range of other options. It's messy, there are multiple channels and there is no 'neat and tidy'. If you give people their head to explore the digital public space, you will see organized complexity and the creation of emergent value.

As one participant described the program:

"Brilliant. Comprehensive and fun. I am now in contact with educators from all around the world."

You can't simply build communities, but you can help people work out how to connect.

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Taxonomy of the Digital Public Space

Naomi Jacobs, Bill Thompson, Jeremy Myerson, Kasia Molga

When talking about connected spaces, traditional terms used include the following: Personal, Private, Public, Social. These are not necessarily mutually exclusive terms, but a space, object or interaction exists along each of these spectra. They can be perceived as referring to the assumed degree of control in each situation. Personal spaces or objects are specific and tailored to the individual. An item that is personal may be shared or not, but personal spaces may be invaded by intrusion of others who are not explicitly invited to do so. For example a notebook used for keeping notes is a personal object that the owner might not wish to share with others, whereas one might own a personal copy of a book and lend it to others to read. Control is centred on an individual. Private spaces have a restricted access list; there is a high degree of control. This does not necessarily mean limited to a specific small number – a private party may have a large attendance but the key factor is that not everybody is able to attend. Public assumes that access and usage is open to all. This may mean that no one particular person has ownership over the space or item – usage is shared, such as a bench in a municipally owned park. It might be argued that public and private are opposite ends of a spectrum. The final term under consideration, social, may be defined as referring to the amount of interaction between persons, either in terms of a space that is shared or an item that is designed for use by many people at once or to facilitate interaction. An example of such a space might be a café.

Social or cultural factors may influence suitability and usage of the above terms for any particular example – for example what counts as a personal space may vary between cultures, and although a park bench is 'public' and can be used by anyone, the social constructs of interaction mean that rules govern who sits on a bench at a particular time – if there are several empty benches and one occupied, an approaching person will not generally sit next to the stranger and if they do so unwelcome conclusions may be drawn.

The digital space requires new paradigms to represent these aspects. The table below provides suggested equivalent terms to reflect the nature of the new spaces:

Personal	***Private***
Created	*Encrypted*
Public	***Social***
Indexable	*Shareable*

A personal digital space or object is one that is created by an individual for their own purposes and usages. This may be created for many different purposes. If this is private, then it must be encrypted and locked so that use is restricted to a particular set. This in some cases may be restricted to one person (the creator) or in other cases to a group of users – either a large or a small group. The critical aspect is that it cannot be accessed by all, or at least the perception must be there that it is not widely accessible. It may be the case that the 'locked door' is notional only, that people could walk around the door but do not go through it because they perceive the way to be barred. The opposite of this is a public object which is indexable and can thus be found by anyone and is connected to the rest of the digital space. Social objects are sharable, they can be easily linked and transmitted to others who may be able to pass them on to others, or co-create and change the nature of the object or space before sending it out again to be shared by others.

The notion of findability is critical in a space where so much data and content is being created. If something cannot be easily accessed then to some extent it does not exist for those who cannot find it. This may in some cases be desirable if the item in question is desired as private, but for content which is produced as being open it is critical that users can find it. There are related issues regarding serendipity and how people can 'stumble across' items that are of use to them. Serendipity does not occur simply because many things are laid out available to find, they must be closely enough related that they are likely to appeal to someone who was actually looking for something else. There are issues with the way that search engines such as Google function in that they 'design out' serendipity by only returning exactly the thing that was being sought.

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Bill Thompson *has been working in, on and around the Internet since 1984 and spends his time thinking, writing and speaking about the ways digital technologies are changing our world. A well-known technology journalist, he is Head of Partnership Development in the BBC's Archive Development Group, building relationships with museums, galleries and other institutions around ways to make archive material more accessible, and a Visiting Professor at the Royal College of Art.*

Jeremy Myerson *is an academic, author and activist in design. He is based at the Royal College of Art where he holds the Helen Hamlyn Chair of Design. He is a Co-Investigator of the Creative Exchange.*

Kasia Molga *is a media artist and interaction designer whose practice is concerned with changes in our perception and relationship with the planet in the increasingly technologically mediated world.*

Building a Digital Public Space

Mo McRoberts

The most valuable things in the world are those which can be bought and sold by nobody but are accessible to everybody.

Parks and commons, roads and walkways, works of art held on behalf by public institutions all fall into this category and help to define our public space, but so does the ability of anybody to send a letter to any recipient they wish. For while public *spaces* are physical environments, "the public space" is a more ephemeral term, capturing the conceptual nexus of the public and the resources that are readily accessible for its benefit.

Throughout human history, society (and as a consequence the public space) has been shaped by new means of communicating with one another. The movable-type printing press put the power of mass dissemination into the hands of the many, to the dismay of the establishment, while a universal postal service did much the same for one-to-one communication.

Although there have been various experiments, particularly in the latter half of the 20th century, it wasn't until the explosion in popularity of the public Internet in the 1990s that there was a broadly-accessible medium which allowed for *both* mass and peer-to-peer communication in one swoop.
We are still adapting–slowly–to this new-found capability.

A key part of this adaptation is that of evolving public expectation. The Internet-savvy public is now in the majority in Britain, and the age of being *surprised* by the ability to accomplish something on the Internet has long since passed us by.

The public *expects* to be able to catch up on television and radio that they've missed, and browse the catalogues of libraries, museums, and galleries. Meeting (or exceeding) the expectations of the public is the currency by which public institutions are valued, and so if those institutions are to remain relevant to the public, it is vital that the interactions in the public space evolve as expectations do.

Meeting these expectations is not without challenges, and many of them are not a matter of technical capability. The evolution of the public space to embrace the Internet–the emergence of a *digital* public space–carries with it some significant pitfalls, but it also some of the greatest opportunities that society has had within its grasp.

There are many applications built on the Internet, but the World Wide Web has so far eclipsed all others, not least in terms of accessibility and flexibility. The Web has changed the way that we communicate with one another: not only in the mechanisms that we use, but in what we say and the way that we say it. It's not at all uncommon to pass comment on something happening in "the real world" by annotating a link to a page describing it. And although we don't necessarily often think of it in those terms, every time somebody "likes" a page on *Facebook* or leaves a comment on it, shares a video on *YouTube* or a photo on *Flickr*, that's what we're doing.

Sir Tim Berners-Lee intended the Web to be incredibly flexible. A great deal more flexible than most people realise, in fact. One feature built into nearly web server in existence is the ability to provide different representations of content depending upon what the client's capabilities are. Often that client will be an ordinary web browser (although of course the range of devices on which an "ordinary web browser" runs is so vast that the term is almost meaningless) and so the most useful representation will be a web page written in HTML that the browser can display.
A few years after creating the Web, Sir Tim realised that the identifiers we use in browsers to locate web pages–URIs–could also be used to identify things which aren't (or even can't be) on the Web. The chair you're sitting on, for example; or the person

who sold you a cup of coffee this morning; or a radio broadcast for which no surviving copies exist.

Just giving things a name (or in many cases, an additional name) which happens to take the form of a URI only achieves so much. The power of the Web lies in links: the name we give to a page or other digital resource also tells a browser everything it needs to know about how to retrieve that resource.

While the chair you're sitting on isn't a digital resource which can be published using a web server, information *about* that chair can be. That information could be a web page, a photograph, or it could be rich, structured, machine-readable information about it.

While there are lots of ways of producing this machine-readable information, the most exciting is the *Resource Description Framework*, or RDF. RDF provides a generic way to express structured data in a uniform way, regardless of the specifics of that data. It even provides the means to express individual vocabularies which are used to make up that data. Like the Web, RDF uses URIs to identify things, including other things being referred to in a given piece of data—this means that a description of one thing can link to the description of something else in much the same way as an HTML page, but in such a way that the links have context and meaning to software processing the data. By creating and publishing RDF, and making it available at the URIs used to name things, we create a *web of data* which sits transparently alongside the web of documents we're used to using in our browsers.

A web of data is immensely powerful. It allows us to express relationships between things in an unambiguous fashion: for example, it allows us to say that *this* television programme features *Brian Cox* (the physicist) while that television programme features *Brian Cox* (the actor).

With structured data published in this way and indexable, we can create new kinds of journeys and experiences around the things they describe.
The use of resolvable URIs (that is, URIs you can retrieve data from) as a kind of name for something also carries with it some provenance information. As only a person or organisation who controls a domain name can publish data on that domain, you know—for example—that data published at a URI beginning with "http://www.bbc.co.uk/" is data published by the BBC.

Because provenance is conveyed in this way, anybody can say anything *about* anything; the authority lent to the publisher on a given topic is determined by the application consuming that data, and could depend upon a great many factors. As a user, you might not care what the British Museum has to say about a television programme, but you might well care what your close friends have to say about it.

This degree of flexibility represents a fundamental shift in the relationship between institutions and the public. Rather than a traditional publisher/broadcaster and audience split, all parties become peers to one another in a space from which anybody can contribute–and everybody can derive value.

Mo McRoberts *works in the BBC's Archive Development department, which develops partnership projects in conjunction with other publicly-funded institutions as well as other parts of the BBC seeking to get the most out of the BBC's vast (and rather varied) archives and ensuring that the next hundred years of increasingly-digital archives are built to last. From late 2011, he has led the technical design and overseen the development of The Space, a digital arts service created in conjunction with Arts Council England which brings more than sixty separate commissions of various shapes and sizes to a technically and culturally diverse international audience.*

Reverberations of the Digital Renaissance

Emma Mulqueeny

The Renaissance we are most familiar with started in the 14th Century and continued its trail of disruption for hundreds of years affecting language, art, design, understanding, belief, fashion, celebrity, politics and brought with it recognition for new types of talent and refinement of skill. It affected the lives of everyone in Europe at the time, although many argue that its affects were felt worldwide in connected nations.

I would argue that we are experiencing a second Renaissance now, a digital one if you take the time to explore the 14th Century Renaissance and research the documented writings and musings of the time, as well as reflective tomes, you will be able to find comparable stories being written now, by many people of all walks of life - from the academics to the tribes in Africa, photographing their land and borders for Google.

This is not the place to explore in detail those comparisons, but you might like to go off and have a bit of a play in your own time and come to your own conclusions, there is possibly several lifetimes of research out there already! However, for the purpose of this piece, I wanted to have a quick look at the affect this is having on education.

For me, the two greatest things that link the 14th Century Renaissance and this one are the dramatic change in the connectivity of people regardless of boundaries: be that land or capability; and the endless possibilities for peer-to-peer learning. Indeed these two things are one: the connectivity of people enables evermore discrete peer-to-peer education.

The disruption in how people learn and how people share knowledge will again be profound and seismic in its affect. I can see the cracks in the chrysalis of modern formal education even now, and it is exciting as well as scary.

Education Nation

It is through education that we grow as a nation, as an inter-nation. Take Ivan Illich's book: Deschooling Society (1971): written in the 70s with a kind of hippy dream of what it would be like if we could disestablish schools. It was seen as a great but impossible work - even though the rhetoric made sense in theory. Yet, I would argue that we have pretty much stumbled upon the environment he predicted we needed, in order to free the minds and talents of the young. He says at one point in the book:

"Such criticism leads many people to ask whether it is possible to conceive of a different style of learning. The same people, paradoxically, when pressed to specify how they acquired what they know and value, will readily admit that they learned it more often outside than inside school.
Their knowledge of facts, their understanding of life and work came to them from friendship or love, while viewing TV, or while reading, from examples of peers or the challenge of a street encounter. Or they may have learned what they know through the apprenticeship ritual for admission to a street gang or the initiation to a hospital, newspaper city room, plumber's shop, or insurance office.
The alternative to dependence on schools is not the use of public resources for some new device which "makes" people learn; rather it is the creation of a new style of educational relationship between man and his environment. To foster this style, attitudes toward growing up, the tools available for learning, and the quality and structure of daily life will have to change concurrently." (Illich, 1971)

It seems to me that we have already stumbled upon this reality, and it is because of this ability to learn directly from living scholars, as well as discover new things from long dead people within minutes and

without moving - discovering, as we go, current and active communities who are experts and passionate in subjects we newly discover, willing to share their learning and encourage ours.

Children are growing up in this world gripped by change, and their expectations are mighty: Open data, open borders, open source. Open Education in schools may seem a long way off from where we are right now - but I simply cannot see any other future for learning. It has to open up to survive and in doing so, we really ramp-up the tangible changes of this modern Renaissance.

I believe that the reality of the size of this change is the real reason why it is so hard for anyone to properly tackle the issue of teaching children modern day Computer Science (in schools). Everyone knows it is an issue, everyone knows that there is little that can be done with it within the current structure of education: teacher imparts expert knowledge to child; child learns in classroom; homework is done at home to reinforce classroom learning.

The teachers in the classroom cannot hope, nor do they want, to keep up with the relentless march of technology and associated skills. There is so much available for free and or structured online that really the only way to get the children coding is for them to learn outside the classroom, then use the physical space to share knowledge and solve challenges together, the teacher becoming the curator of the room, not the fountain of knowledge.

But this is not only true for Computer Science. It is true for History, Physics, Mathematics, Art, every (Renaissance) subject you can think of - the tools for learning, and the communities and experts are there for everyone in the digital space, regardless of location, borders, abilities - if we truly solve this problem for Computer Science, we start to pull the thread of education and then it gets interesting.

I look forward to a world led by our children, experts in subjects we have not even yet thought of, and sharing that knowledge with each other, across borders and maybe, who knows, across time.

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***Emma Mulqueeny** is the founder of Rewired State and Young Rewired State: Coding a better country. Rewired State is the largest independent developer network in the UK with over 800 software developers and designers, bringing about digital innovation and revolution through rapid prototyping events (hack days). Young Rewired State is its philanthropic arm and is the only developer network of young programmers aged 18 and under who have taught themselves how to code. Both networks work together to prototype solutions to real world problems. Emma has recently been voted onto the Wired 100 list, writes regularly for The Guardian, The Telegraph and on her own blog and is best known for her campaign to 'Teach our kids to code', relentlessly pushing the potential of the UK digital industry.*

Digital Common Space: Remixability

Jussi Parikka and Paul Caplan

The Digital Public Space is not really a space. It is much more: it is a habit of production, sharing, mixing and remixing. It is in this sense "an affordance", something that enables us to communicate and produce in particular ways. It is less a question of what does the digital public space mean than what you can do with that. The idea of the public however is way too broad and it has been contested with the idea of the common. The public is an empty term unless we make the public into a common: something we share, care and produce together. This applies to both natural things, like the environment, but it applies to cultural production too. There is something "ecological", in the manner Félix Guattari (2000) used the term, about the common: it relates to those things that we share and care for together but also which has an impact on how we think, feel and mould ourselves and our shared being. The common remixes the way we are.

The digital common space is in this sense linked to a particular mode of production and this particular mode of production is a mode of social being. It is linked to the notion of the archive, which, to be honest, is overused and inflated in the discourse of digital culture. Everything seems to be an archive, with an intentional or accidental conflation of archives with any mode of (digital) storage. Storage does not mean archive: archives are based on principles of selection.

The media archaeologist Wolfgang Ernst (2013) insists us to specify our understanding of the archive in the digital age, and avoid the fluffy inflation of the term. For Ernst, the archive is a principle and in the digital age one where the archive becomes "a function of transfer processes" (Ernst 2013, p. 98). No more delay between storing and retrieving, the digital archive introduces a new temporality. Partly this has to do with the technical support of archives, partly it has to do with the usability introduced by instant-retrievability.

Digital common space is something meant for participation by us: this sort of "space" exists only when it is operational, used and shared. This applies to archival thinking in the digital age too. We are moving away from the idea of the archive as the other place meant for specialists and the Archivist, to the archive as the common use-space. What does this mean in practice? One way to approach these questions are through the practice of "remix".

Remix is usually seen as the province of DJs, VJs and artists – Girl Talk and D J Spooky, artists sampling what Mark Amerika calls 'source material everywhere' (2011) under the noses of the record company lawyers, wandering through their archives like a digital flâneur, cutting and pasting IP. The archive is a contested space. For digital capital the archive is private, proprietorial and tightly (digital rights) managed. For digital remixologist: public, common and open. The archive as source material here versus the archive as source material everywhere. But that field of struggle extends beyond the artist. We are all remixers now, archive surfers.

We walk through physical space with a remixological device in hand. We sample and remix everyday source material – our emails and status alerts, maps and news, photos and messages and with the development of 4G audio-visual streams. Our phones are a window into the archives, those of the broadcasters and record companies, those of the press and social networks. Across that tiny screen we wander, pick and choose, save and grab, remix playlists and viewlists, read-later lists. We read and write and read/write. Like Walter Benjamin's Arcades Project

(2002) our iPhone collects fragments, the rags 'n refuse of our time and of previous times, layered in their archives and ours (sic). Because it's not just the BBC, Sony and News Corporation's archives we remix. It is those of our 'Friends'. We dip into their timelines and like and share the rags 'n refuse of their archives. We remix them into our own or into others as we reTweet.

The rhetoric of this everyday remix is that we are powerful, owners and artists of our own archives and spaces: my Facebook page, my Timeline, my Tweets. Here the everyday act of remixology constitutes a commons. In reality however those personal and personal-social archives and the strange public-private spaces they set in motion have a shadowy existence as part of commercial archives every bit as powerful, protected and proprietorial as those of Warner Bros and MGM. Facebook's servers are archives. They invite us to wander and remix, to sample and connect. The rhetoric again positions this as run through with a common power of selection – I Like, I Share… But as unhuman, uncommon algorithms connect data points and every access and every remix act is fed back into the archive as a data trail and point to be mined for information and then served back into the Archive as another object to be sampled, shared and remixed, the common on which Friends meet is subject to a form of enclosure.

Our phones as remixological devices connect us with that full range of archives and enable us to remix in the public. But whether that creates a new digital commons or a new Enclosure is another question that needs to be addressed as part of every creation of the public – or indeed, the common.

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The Measure of Success

Aaron Straup Cope

How will the role of museums, archives and libraries and their measure of success evolve in a Digital Public Space?

In 2011, I was invited to speak at the Experimenta Design Biennale in Lisbon, Portugal. One day, I asked a question to a panel of product designers and as I was sitting down I realised that I had meant to ask a very different question. What I said was:

"Would you discuss the impacts of just-in-time production facilities and on-demand manufacturing ?"

What I meant to say was:

"Would you discuss the impacts on your idea of success as professionals of just-in-time production facilities and on-demand manufacturing ?"

The world of product design was still relatively new to me but during the course of the event I was hearing an awful lot of comments like:

"It was ahead of its time."

"People weren't ready for it."

"I had 90,000 of them manufactured and then I had to figure out where to store them."

"I went bankrupt."

It occurred to me that historically the notion of success for product designers has, by-and-large, been a binary one: Either, you had produced and sold four-million chairs (so to speak) and were considered a god among men or you were, basically, less than dirt. And right or wrong this has largely been a function of the cost and access to the means of production.

Building and tooling a factory remains a non-trivial and expensive endeavour. In order for everyone to recoup their costs the product needs to be sold at a premium or aspire towards "blockbuster" status. In order to offset a sale price that doesn't reflect its true cost. So, we tend to celebrate those who can guarantee a return on investment.

This is fine. There is nothing de facto wrong with aspiring to, and having the opportunity to, create a product whose success is celebrated far and wide. But that is not the only definition of success or, at least, it shouldn't be.

I do not expect that any time soon we will all own and operate professional-grade automated machine tools (sometimes called CNC machines) in the basements of our homes. I do, however, believe that in time there will be a variety of small and large scale commercial operations in both urban and rural environments, whose services people might contract to produce bespoke and high-quality objects.

What will that mean for product designers? How will they achieve financial success (or at least stability) producing and selling items in small batches? Will they be able to weather the financial cost of a failed or avant-garde product? And what will it mean to do all of this in the absence of mass approval and celebration?

Increasingly, we are no longer able to use access to the means of production and, in the case of the internet, distribution as a proxy for either quality or authority, or ultimately success. Which is not to suggest the end of quality or authority but only to point out that the measure we've used in the past is no longer adequate.

Why didn t the businessman David Walsh give his art collection to an established museum, instead of building his own the Museum of Old and New Art (MONA) from scratch? MONA is the far end of the spectrum when we talk about what is possible. By all reports, David Walsh has more money than the sky but squint your

eyes a bit and you see not money but means and desire.

Desire has always been present but is often absent of an outlet (absent the means). Now, look at the Internet because that is the ocean that museums, archives and libraries are swimming in. The Internet is the means that people are using to greater and greater effect to perform the roles that the cultural heritage sector has traditionally assumed.

Even if the subject matter of the things that are being "collected" seems trivial to us now. A comprehensive image catalogue of VGA display adapters on Tumblr does not an archive, or an expert, make. But it is an important piece of the puzzle. Particularly so when that same person writes and then publishes the definitive history of the technological and social impact of those devices.

Equally important is the idea that mere inclusion in a catalogue automatically confers merit to a subject. When catalogues were synonymous with "books", this made a kind of sense. But that measure no longer holds in a world of databases connected to a global network.

The opportunity that museums, archives and libraries have is to act as a zone of safe-keeping, as a place to preserve the present for some as-yet unknown interest in the future; for all that "stuff" we've simply never had the means to collect.

Facebook is, today, the world's largest repository of wedding photos, which at the moment amount to little importance and even less interest. But come 50 years from now, they will be a wealth of hints and cues and emergent patterns about the times in which they were taken. They are the raw material of future scholarship. They are also locked away inside a commercial enterprise whose only long-term obligation is to their shareholders.

The cultural heritage sector is more than the sum of its scholarly publications. It is a public trust made possible by a community of strangers that is not limited to our professional colleagues because it is seen as a common good. With that trust, comes not only the question of access but increasingly an expectation of inclusion and participation.

It's not entirely clear to anyone what that means just yet but if we, as a community, don't stop to consider it, we may find that people simply take on the project themselves. Because they can.

Aaron Straup Cope *is currently Senior Engineer (Internets and the Computers) at the Smithsonian Institution's Cooper-Hewitt National Design Museum. Aaron spends a lot of time thinking about archiving social software and looking glass archives. He likes maps and olive oil and does not normally speak in the third person. The long version is: http://aaronstraupcope.com/about/*

Public Domain 4.0

Marleen Stikker

It is not that long ago that a new public domain was discovered. In 1993 the internet was a black screen with a blinking cursor that only divulged its secrets if you typed in Unix codes. With OReilly's Unix books by my side, I discovered the endless possibilities this new territory offered.
At that time we all searched for metaphors that could help to explain this new area. Those who wanted to emphasise the speed of exchanging data called it the "electronic highway"; adventurers who saw it as a universe filled with planets and galaxies named it Cyberspace. With a group of people we chose for the metaphor of the city and built the first *Digital City*, or *De Digitale Stad (DDS)* as we say in Dutch. We created an additional public domain. *Public Domain 2.0.*

We chose the metaphor of the city not as a mirror of a geographical city, as it is often used now, but because this metaphor included the diversity of interactions we envisaged. It enabled us to play with the characteristics of private and public spaces and to establish a pluralist society of citizens and users. Both individuals and groups, professionals and amateurs, citizens and politicians, controlled and open. We were fully aware of the potential of this virgin territory on a branch to be cultivated and felt responsible for its open and public character. It is not an accident that the *Digital City* was built by the 80s generation. A generation that was used to take matters in their own hands and who had shown initiatives that created a public domain in the ether, for example, with pirate TV and radio stations. And of course by occupying empty buildings and starting independent chains of production and infrastructures. All fashionable terms now, applied then. The start of a public internet was a DIY movement, a maker movement avant la lettre. Co-creation was the norm. The public aspect of the internet is a beautiful legacy of the *No Future* generation.

FAQ

The euphoria of the endless possibilities and the public character of the internet did not last long. In 1997 the necessity rose to defend the newly discovered public domain against forces that tried to limit the openness. *DDS* was already involved in several lawsuits around copyright infringement, freedom of expression and distribution of child pornography. The judges were at a loss and the cases were dismissed, but the first signs of the long dispute about the open aspects of the internet were clear. During the *Documenta X* exhibition in Kassel, *Waag Society* presented the *"We want Bandwidth"* campaign; we also wrote a FAQ about the *Public Domain 2.0*, which celebrated this newly discovered public domain and tried to ensure that the internet remained an open place.

We are the cursor

The battle for the public domain in the internet is still unresolved and requires our full attention. But there is a new frontier. Technology has transformed our physical space: Internet of Things, RFID, sensors and advanced mobile technology. It now occupies the streets, our homes, our shops, our transport systems. We live in the time of "interreality", of mixed reality – there is interference between the programmed and the physical space. Only the mechanisms are no longer visible, you cannot observe what is happening. We need to determine what to do with this dimension of measurable things around us. It even affects the notion of our bodies and the notion of the self. The blinking cursor is not longer outside of us. We are the cursor.
It is internalised, as it were – as a third, additional domain.

Nowadays, these three notions of public domain coexists: the public domain in the physical space, the public domain in

cyberspace and the third emerging public domain that extends cyberspace into the physical space. Lets call this the coded space.

Technology is an invisible force in our lives. Algorithms and code have become more prescriptive than the law. And that brings us to the awkward situation that, while there is a lively debate about the interpretation of the law, we lack the ability to discuss the meaning of technology.

To safeguard the public domain in all three dimensions we have to develop a common language. A language that enables us to discuss the ethics and politics of technology and the requirements for an open and inclusive society.

Marleen Stikker *is the founder of De Digitale Stad (The Digital City): a virtual community first established in 1994 to introduce free public access to the internet. She is also founder of Waag, a social enterprise that consists of: The Waag Society and a Research Institute and Incubator for Creative Technologies and Social Innovation. She is chair of PICNIC, an innovation platform and leading European event for the Creative Industries, which is hosted every year in Amsterdam.*

A Short Meditation on a Cartography of Hybrid Space and How to Intervene Within It

Michelle Teran

A container of stories depicted through online video
An arrangement of multiple temporalities
Geotagging online information back to the city
Unofficial archives
Unofficial maps
Located narratives
Everyday performance
Ephemera
Forgotten histories
YouTube
The personal made public
The publication of the private
Digital Public Space
To inhabit both city and network
A tension between the online domain and the domain of the city

Life as an online stalker
Invisible global audience
To witness, categorize, collate experience
To observe and interrogate
To appropriate, misuse and recycle
Creating constellations
Emergence of the curatorial
An invitation to follow
Sharing memories, sharing space
A view within
Intimacy at a distance
Distance
Curiosity
Longing
Desire
Getting lost
Living autobiographically
How we create identity in narrative

Performing excavations of the recent past
Archeology of the everyday
Stopping flow
Freezing timelines
Slowness
Micro-histories
Biography
Memoir
Memorial
Life as an urban stalker
Following traces
A private detective
A journalist
A spy
The implications of observation
Leaky maps
Pilgrimages to the spaces of memory
Bearing witness
There's no such thing as an innocent bystander

An intimate encounter with a stranger

Michelle Teran *is a Canadian-born artist whose practice explores media, performance and the urban environment. Her work critically engages media, connectivity and perception in the city.*
Her performances and installations repurpose the language of surveillance, cartography and social networks to construct unique scenarios that call conventional power and social relations into question.
Currently she is a research fellow within the Norwegian Artistic Research Fellowship Programme at the Bergen Academy of Arts and Design, 2010-2013.
She is the winner of the Transmediale Award, the Turku2011 Digital Media & Art Grand Prix Award, Prix Ars Electronica honorary mention (2005, 2010) and the Vida 8.0 Art & Artificial Life International Competition (Madrid). She lives and works between Bergen and Berlin.

Constructing a Digital Public Space

Bill Thompson, Drew Hemment, Rachel Cooper, Charlie Gere

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The term Digital Public Space is being used by a growing number of cultural bodies to describe the online environment which will emerge as they make their digitised collections more available to each other and to the wider world. It expresses the growing desire to offer anyone, wherever they may be, the opportunity to access, explore and create online. It will open up collections of films, photographs, television programmes, books and much of the rest of the amazing material currently held in our museums, galleries, broadcasters and other memory institutions.

Looking beyond these cultural archives, it may include public information from open data stores, user-generated content, and data trails which individuals are able to control and trade. It will also include, where owners permit, material from the commercial world too.The digital media we produce is 'out there' waiting to be accessed and assembled in new ways. It creates threads connecting us through time. Our audience, or our collaborators, may be people looking back at us and our creations in twenty years time.

Within the Digital Public Space every digital asset that can be shared will be shared, and as we digitise more of the analogue past this could stretch to encompass the whole of recorded culture.The Digital Public Space will be a high street, not a shopping mall. It is intended to constitute a public space that supports many activities and can sustain private, political, cultural and commercial uses without being dominated by any or appropriated by one group or model.

It relies entirely on the open Internet and full access to all it offers, on which will be built the standards, tools and services needed to create a commons, owned by nobody, accessible to all, outside the commercial imperative and free of state influence, an online space for interaction, engagement and experience, that can be used to inform, educate and entertain those who visit it.

It will be an online space that meets the needs of the cultural sector and the arts and which offers unparalleled opportunities to find and engage with audiences but it not be exclusively for this sector and will support and sustain other areas of activity.It will not be primarily a space for commercial activity but it will offer opportunities for commercial transactions and support all the necessary mechanisms and tools needed to make these trustworthy.

Like the Internet itself the Digital Public Space will not be owned by anyone, but will be constituted from the collaborative activity of all those who join it, existing as the shared space between their services, content and tools. It will grow as its constituent membership grows.

It will contain all that its constituent organisations wish to make available, whether born digital, fully digitised or a digital representation of a physical artefact, drawing on the world's cultural heritage in all its forms and variety. The Digital Public Space will make new forms of collaborative work possible in ways that as yet are not even imagined. It offers not just new means of making the things we already make, but of developing new forms of culture, based around shared catalogues and metadata and simple licensing of material.

The Digital Public Space has emerged as a framework for thinking about the ways in which the arts and culture will reshape themselves in the screen-based, online world that FutureEverything has foretold and shaped for many years. The Digital

Public Space makes new paradigms for cultural engagement for creators, audiences and institutions built around shared data models, open interfaces and standards for authentication, rights management and identity, but we do not yet have a clear idea of what that will enable or how it will be deployed.

The goal, therefore, is to look at the Digital Public Space from all angles, to challenge and refine the core ideas, explore the current and future technologies that could sustain it, and ask about its real value to artists, institutions and the public whom it is supposed to serve.

One question is whether it can release public value or simply whether it offers another way for larger institutions and corporations that hold rights to assert their hegemony, and lock the public out, and explore the technological barriers that stand in the way of delivering a genuinely public online service.

Bill Thompson *has been working in, on and around the Internet since 1984 and spends his time thinking, writing and speaking about the ways digital technologies are changing our world. A well-known technology journalist, he is Head of Partnership Development in the BBC's Archive Development Group, building relationships with museums, galleries and other institutions around ways to make archive material more accessible, and a Visiting Professor at the Royal College of Art.*

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